

Appln No. 10/081,152
Amdt date December 28, 2006
Reply to Office action of October 3, 2006

REMARKS/ARGUMENTS

In the Office action mailed October 3, 2006, claims 1-19 were pending, of which claim 19 was previously cancelled. Claims 4 and 13 were objected to as lacking antecedent basis under 35 U.S.C. § 112, second paragraph. Claims 1-7, 9-16 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,895,012 to Amou et al. ("Amou") in view of U.S. Patent 6,438,134 to Chow et al. ("Chow"). Claims 8 and 17 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Amou and Chow and further in view of U.S. Patent 5,867,483 to Ennis Jr. et al. ("Ennis"). Claims 1, 2, 4, 10, 11 and 13 have been amended. Claims 1-18 are now pending. The Examiner is thanked for attention to the application.

As an initial matter, the Office action correspondence was directed to the address of the Assignee rather than the attorney of record. The Assignee filed a Substitution of Attorney with Change Of Address For Correspondence By Assignee dated July 17, 2006. A copy of the aforementioned Substitution of Attorney with Change Of Address For Correspondence By Assignee retrieved from the Public PAIR system has been included herewith. The stamp on the PAIR document indicates that it was received by the USPTO on July 21, 2006. It is respectfully requested that all future correspondence be directed to the customer number address of the attorney of record designated in the aforementioned document (Christie, Parker & Hale, LLP).

As a second initial matter, the Office action states "Regarding claims 1, 10, Amou et al. disclose...recited 'the queue set includes bandwidth guaranteed queues, and by setting the weights of each of the bandwidth guarantee queues' as bandwidth guaranteeing process...". (Office action, page 3). Applicant is unable to find the quoted portion, "the queue set includes bandwidth guaranteed queues, and by setting the weights of each of the bandwidth guarantee queues", in the text of Amou. Amou however states that "The queue set 12 includes bandwidth guaranteed queues 13 and the priority queue class 14 as illustrated.", (Amou, col. 5, lines 17-18), and "By setting the weight ϕ_i of each of the bandwidth guaranteed queues 13 and the weight ϕ_p of the overall priority queue class 14 as in equations (4) and (5), achievement of both bandwidth guarantee and preferential control as aimed at by the present invention becomes easy." (Amou,

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col. 5, lines 55-59). Further, the Office action states "Regarding claims 1, 10, Amou et al. disclose...recited 'the weight memory means notifies the weights of the bandwidth guaranteed queues stored in it and the weight of the priority queue class to the weight sum' as assigning a priority...". (Office action, pages 3-4). Applicant is unable to find the quoted portion, "the weight memory means notifies the weights of the bandwidth guaranteed queues stored in it and the weight of the priority queue class to the weight sum", in the text of Amou. Amou however states "the weight memory means 22 notifies the weights Φ_i of the bandwidth guaranteed queues stored in it and the weight Φ_p of the priority queue class 14 to the weight sum...". (Amou, col. 10, lines 39-41). It appears as though some special characters and reference numerals were inadvertently omitted.

Claims 4 and 13 were objected to as lacking antecedent basis under 35 U.S.C. § 112, second paragraph. More specifically, the Office action indicates that the limitation "none of the queues of the of the first group" recited in claims 4 and 13 lacks antecedent basis. (Office action, page 2). Claim 4 has been amended to recite "...none of the queues wishes to transmit a packet or unit using the bandwidth guaranteeing process." Similarly, claim 13 has been amended to recite "...none of the queues wishes to transmit a packet or unit using the bandwidth guaranteeing process." Accordingly, it is believed that amended claims 4 and 13 comply with 35 U.S.C. § 112.

Claims 1-7, 9-16 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Amou in view of Chow.

Claims 1-3 and 10-12 have been amended.

To establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2142 citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Claim 1, as amended, recites "when no queues transmit units or packets using the bandwidth guaranteeing process". The Office action states that "Regarding claims 1, 10, Amou et al. disclose...when no queues transmit units or packets using the bandwidth guaranteeing process (recited 'when all of the priority queues of the priority queue class are empty' as when no queues transmit units or packets; column 7, lines 54 - 60)".

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(Office action, pages 3-4). In Amou, however, "The queue set 12 includes bandwidth guaranteed queues 13 and the priority queue class 14 as illustrated." (Amou, col. 5, lines 17-18). Thus, the portion of Amou cited by the Office action relates to when the priority queues are empty, and does not relate to when the bandwidth guaranteed queues are empty. Accordingly, the cited portion of Amou does not teach, disclose or suggest "when no queues transmit units or packets using the bandwidth guaranteeing process", as recited by amended claim 1. Accordingly, a prima facie case of obviousness has not been made and claim 1 is patentable for at least this reason.

Further, amended claim 1 recites "when no queues transmit units or packets using the bandwidth guaranteeing process...determining a first queue having a variable with a value fulfilling a predetermined criterion". The Office action states "Regarding claims 1, 10, Amou et al. disclose...when no queues transmit units or packets using the bandwidth guaranteeing process (recited 'when all of the priority queues of the priority queue class are empty' as when no queues transmit units or packets; column 7, lines 54 - 60): determining a queue having a variable with a value fulfilling a predetermined criterion (recited 'the smaller the value of pri_i' as a queue having a variable with a value fulfilling a predetermined criterion; column 12, lines 39 -42)". (Office action, pages 3-4).

As indicated above, col. 7, lines 54-60 of Amou relate to when the priority queues are empty, not when the bandwidth guaranteed queues are empty. Accordingly, Amou does not teach, suggest or disclose "when no queues transmit units or packets using the bandwidth guaranteeing process...determining a first queue having a variable with a value fulfilling a predetermined criterion", as recited by amended claim 1, and claim 1 is therefore allowable.

Moreover, in regard to FIG. 10 and the portion cited by the Office action, Amou further states, (col. 12, lines 35-42, underlining added):

Step S24: It is determined if the queue to be noted is active in state (having packets) and a queue of the priority queue class 14. If the answer is No, the operation routine returns to the original processing again.

Step S25: When the priority order (priority) of the queue to be noted is larger than pri_i of the currently selected queue, the operation routine returns to the original processing. The smaller the value of pri_i, the higher the priority.

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Thus, the portion recited by the Office action, "the smaller the value of pri_i", appears in Step S25 of Amou. However, in Amou it appears that Step S25 is not executed when all of the priority queues of the priority queue class 14 are empty for the Amou system. Accordingly, the Office action fails to demonstrate that the cited references, alone or in combination, teach, suggest or disclose "when no queues transmit units or packets using the bandwidth guaranteeing process...determining a first queue having a variable with a value fulfilling a predetermined criterion", as recited by amended claim 1. Accordingly, a prima facie case of obviousness has not been made and claim 1 is patentable for at least this reason.

Further still, amended claim 1 recites "when no queues transmit units or packets using the bandwidth guaranteeing process...transmitting a packet or unit from the first queue to the transmission medium".

As indicated above, col. 7, lines 54-60 of Amou relate to when the priority queues are empty, not when the bandwidth guaranteed queues are empty. Accordingly, Amou does not teach, suggest or disclose "when no queues transmit units or packets using the bandwidth guaranteeing process...transmitting a packet or unit from the first queue to the transmission medium", as recited by amended claim 1, and claim 1 is therefore allowable.

Moreover, the Office action states that "Regarding claims 1, 10, Amou et al. disclose...transmitting a packet or unit from that queue to the transmission medium (recited 'this queue i is selected and select=1 is output from the selecting means' as transmitting a packet or unit from that queue to the transmission medium; column 12, lines 54 - 58)". (Office action, pages 3-4, underlining added). However, Amou states that "The selecting means 34 outputs the packet information to be given to the weight sum computing means 23 next based on the 'queue state' information, 'priority order' information, and 'priority queue' information from the means 31, 32, and 33." (Amou, cols. 6-7, lines 66-03). It therefore does not appear the statement of Amou that "this queue i is selected and select=1 is output from the selecting means" indicates transmitting a packet or unit from that queue to the transmission medium, and claim 1 is allowable for at least this reason.

Further still, amended claim 1 recites:

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3. when no queues transmit units or packets using the bandwidth guaranteeing process...determining a new value for the variable of the first queue, the new value relating to a mathematical operation using a previous value for the variable at a point in time prior to transmission of the packet or unit and a factor scaling with/relating to the priority or quality of the first queue multiplied with a factor relating to a size of the packet or unit transmitted from the first queue and/or a period of time used for transmitting the packet or unit, where the mathematical operation brings the new value to, compared to the previous value, not fulfill the predetermined criterion.

With regard to this element of claim 1, the Office action recites "recited 'computes the service time F_i of the queue i , stores F_i after this computation in the memory' as determining a new value for the variable of the queue..." Applicants respectfully disagree. For the aforementioned reasons, Amou does not appear to teach "when no queues transmit units or packets using the bandwidth guaranteeing process". Accordingly, it does not appear that Amou teaches, suggests or discloses "when no queues transmit units or packets using the bandwidth guaranteeing process...determining a new value for the variable of the first queue, the new value relating to a mathematical operation using a previous value for the variable at a point in time prior to transmission of the packet or unit and a factor scaling with/relating to the priority or quality of the first queue multiplied with a factor relating to a size of the packet or unit transmitted from the first queue and/or a period of time used for transmitting the packet or unit, where the mathematical operation brings the new value to, compared to the previous value, not fulfill the predetermined criterion", as recited in amended claim 1. Accordingly, a prima facie case of obviousness has not been made and claim 1 is patentable for at least this reason.

Amended claim 10 recites "means for, when no queues transmit units or packets using the bandwidth guaranteeing process". For the aforementioned reasons, the cited references do not teach, suggest or disclose "means for, when no queues transmit units or packets using the bandwidth guaranteeing process", as recited in amended claim 10. Accordingly, claim 10 is patentable for at least this reason.

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Amended claim 10 recites "means for, when no queues transmit units or packets using the bandwidth guaranteeing process...determining a first queue having data and having a variable with a value fulfilling a predetermined criterion". For the aforementioned reasons, the cited references do not teach, suggest or disclose "means for, when no queues transmit units or packets using the bandwidth guaranteeing process...determining a first queue having data and having a variable with a value fulfilling a predetermined criterion", as recited in amended claim 10. Accordingly, claim 10 is patentable for at least this reason.

Amended claim 10 recites "means for, when no queues transmit units or packets using the bandwidth guaranteeing process...transmitting a packet or unit from the first queue to the transmission medium". For the aforementioned reasons, the cited references do not teach, suggest or disclose "means for, when no queues transmit units or packets using the bandwidth guaranteeing process...transmitting a packet or unit from the first queue to the transmission medium", as recited in amended claim 10. Accordingly, claim 10 is patentable for at least this reason.

Amended claim 10 recites "means for, when no queues transmit units or packets using the bandwidth guaranteeing process...determining a new value for the variable of the first queue, the new value relating to a mathematical operation using a previous value for the variable at a point in time prior to transmission of the packet or unit and a factor scaling with/relating to the priority or quality of the first queue multiplied with a factor relating to a size of the packet or unit transmitted from the first queue and/or a period of time used for transmitting the packet or unit, where the mathematical operation brings the new value to, compared to the previous value, not fulfill the predetermined criterion." For the aforementioned reasons, claim 10 does not teach, suggest or disclose "means for, when no queues transmit units or packets using the bandwidth guaranteeing process...determining a new value for the variable of the first queue, the new value relating to a mathematical operation using a previous value for the variable at a point in time prior to transmission of the packet or unit and a factor scaling with/relating to the priority or quality of the first queue multiplied with a factor relating to a size of the packet or unit transmitted from the first queue and/or a period of time used for transmitting the packet or unit,

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where the mathematical operation brings the new value to, compared to the previous value, not fulfill the predetermined criterion", as recited in amended claim 10. Accordingly, claim 10 is patentable for at least this reason.

To establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The Office action states that "It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Amou et al. to include wherein the units or packets may have different sizes such as that taught by Chow et al. in order to provide method for servicing a plurality of queues holding messages, such as data packets, destined for processing by a resource having a finite processing bandwidth, such as a communications link having a finite transmission bandwidth (as suggested by Chow et al., see column 3, lines 17 - 21)." (Office action, page 5). The Amou reference relates to a method and apparatus for packet scheduling in network. (Amou, Title). Amou teaches "An object of the present invention is to provide a method and apparatus for packet scheduling guaranteeing the bandwidth reserved under a bandwidth guarantee and guaranteeing preference to packets of high priority traffic over packets of low priority traffic under preferential control." (Amou, col. 3, lines 11-15). Amou does not however appear to express a need for a "method for servicing a plurality of queues holding messages, such as data packets, destined for processing by a resource having a finite processing bandwidth, such as a communications link having a finite transmission bandwidth", as recited by the Office action. Further, Applicant submits that the Amou reference is complete in and of itself. Accordingly, the Office action fails to demonstrate a motivation or suggestion to combine Amou and Chow. Accordingly, claims 1 and 10 are patentable for at least this reason.

Further, if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. (MPEP § 2143.01.VI) citing *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Chow states that "Generally speaking, the invention provides a method for servicing a plurality of queues holding messages,

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such as data packets, destined for processing by a resource having a finite processing bandwidth, such as a communications link having a finite transmission bandwidth. The method comprises the steps of: (a) provisioning each queue with a minimum guaranteed service rate...". (Chow, col. 3, lines 17-23, underlining added). As previously discussed, Amou states that "The queue set 12 includes bandwidth guaranteed queues 13 and the priority queue class 14 as illustrated." (Amou, col. 5, lines 17-18). Modifying the Amou system such that each queue, the queue set of Amou including both bandwidth guaranteed queues 13 and priority queues 14, has a minimum guaranteed service rate would change the principle of operation of the Amou system. Accordingly, the teachings of Chow and Amou are not sufficient to render claim 1 or claim 10 prima facie obvious. Accordingly, claims 1 and 10 are patentable for at least this reason.

Claims 2-9 depend from claim 1, which is patentable for the aforementioned reasons. Accordingly, claims 2-9 are patentable.

Claims 11-18 depend from claim 10, which is patentable for the aforementioned reasons. Accordingly, claims 11-18 are patentable.

Accordingly, the application is now in condition for allowance, and allowance of same is respectfully requested.

Respectfully submitted,
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